

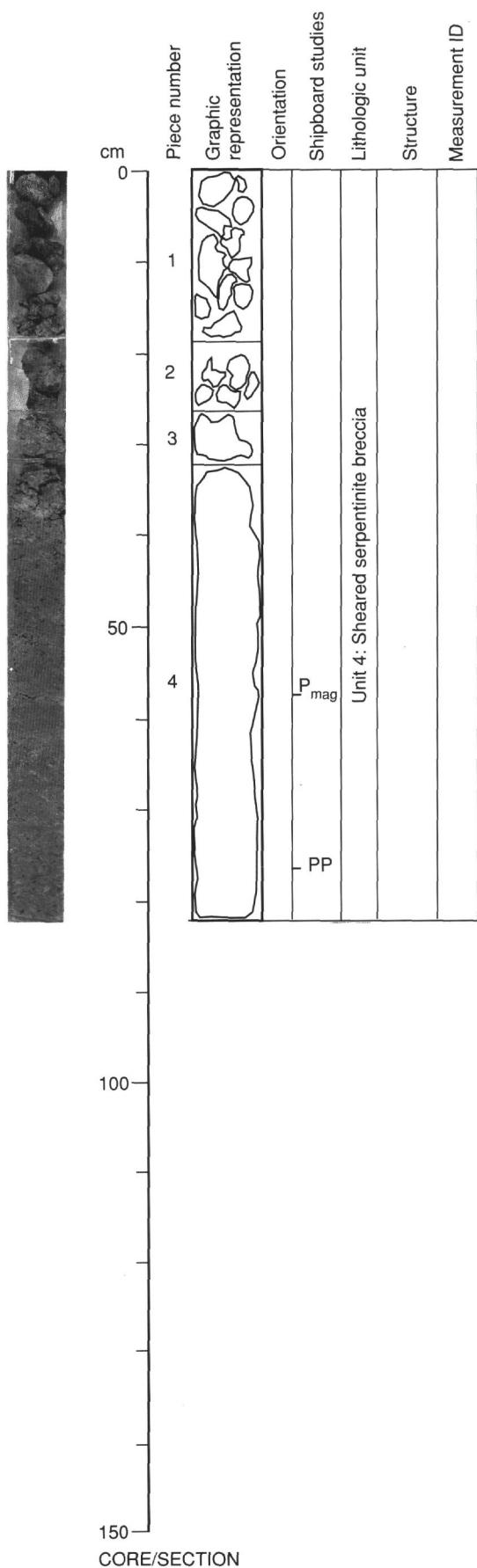
149-897C-66R-1

UNIT 4: SHEARED SERPENTINITE BRECCIA

Pieces 1-4

PRIMARY MINERALOGY: No primary minerals present.

ADDITIONAL COMMENTS: Piece 1 is an assortment of rounded drilling pebbles (including sediments). The other material is a breccia of comminuted serpentinite. Fragments, 0.1-1 cm in size, are serpentinized pyroxene crystals embedded in a soft green matrix which has been highly sheared and disturbed by drilling. Unit 4 continues to Section 149-897C-66R-3.

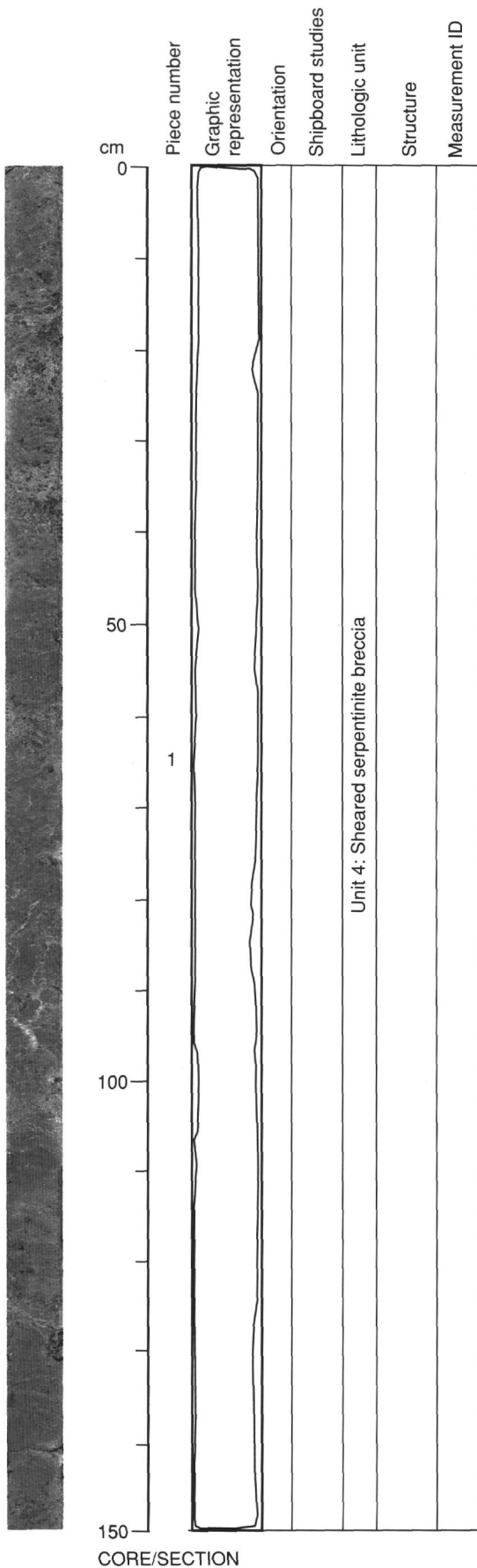


UNIT 4: SHEARED SERPENTINITE BRECCIA

Piece 1

PRIMARY MINERALOGY: No primary minerals present.

ADDITIONAL COMMENTS: Breccia is composed of comminuted serpentinite. Fragments, 0.1–1 cm in size, are serpentinized pyroxene crystals embedded in a soft green matrix which has been highly sheared and disturbed by drilling. Unit 4 continues to Section 149-897C-66R-3.



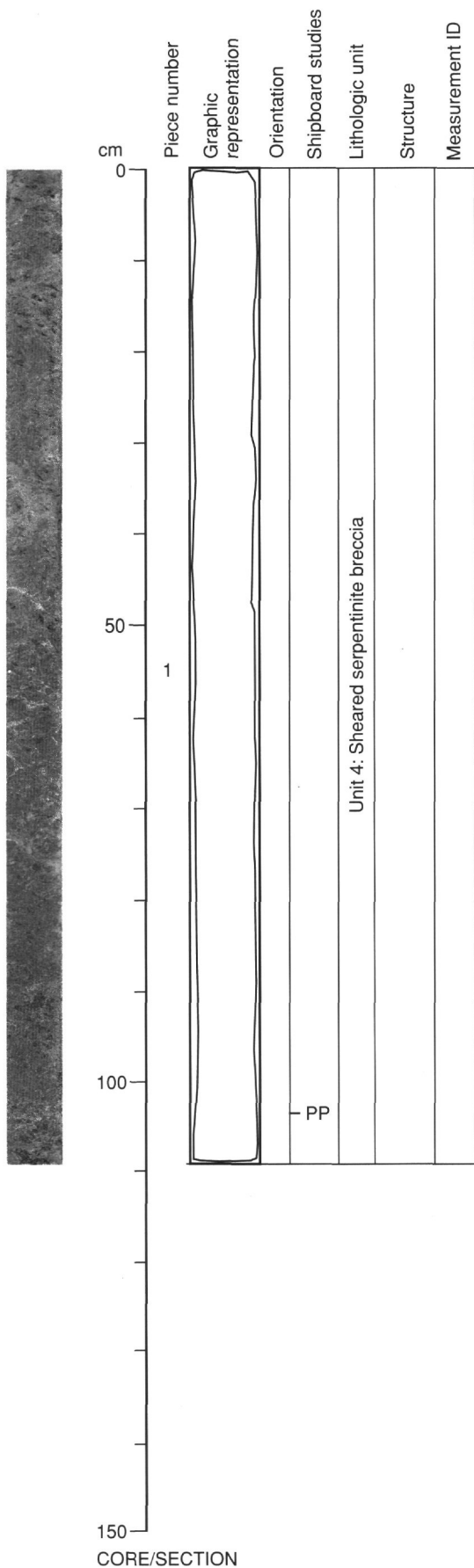
149-897C-66R-3

UNIT 4: SHEARED SERPENTINITE BRECCIA

Piece 1

PRIMARY MINERALOGY: No primary minerals present.

ADDITIONAL COMMENTS: Breccia composed of comminuted serpentinite. Fragments, 0.1–1 cm in size, are serpentinized pyroxene crystals embedded in a soft green matrix which has been highly sheared and locally disturbed by drilling.



UNIT 5: PATCHY SERPENTINIZED PERIDOTITE

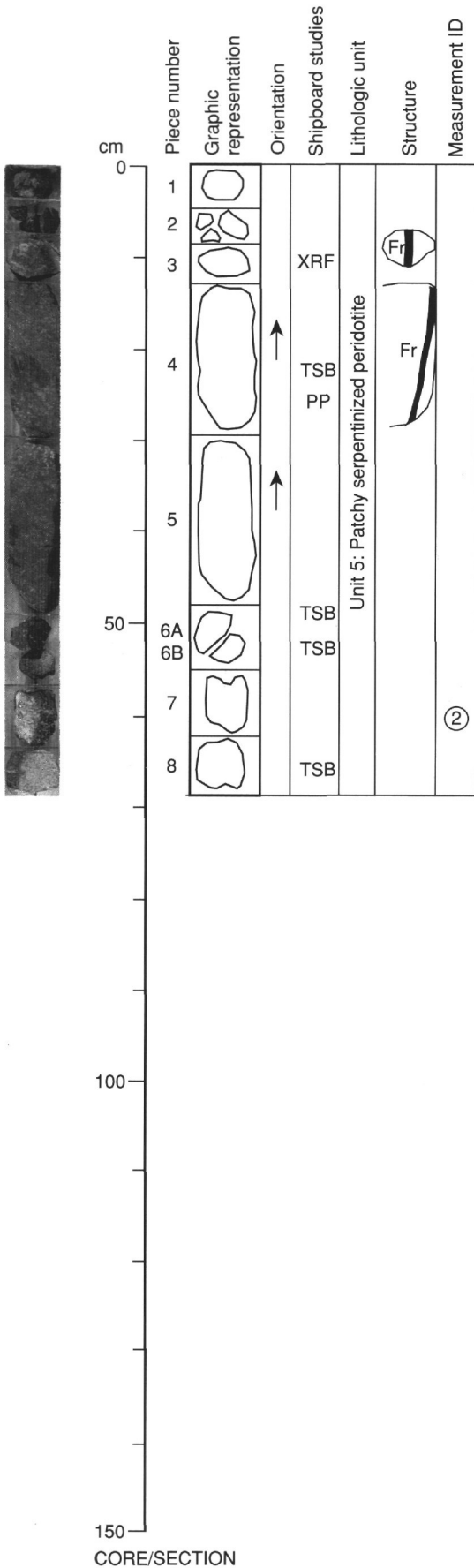
Pieces 1 to 8

COLOR: Dark gray (N3).
LAYERING: None.
DEFORMATION: Late brittle fractures filled with serpentine.

PRIMARY MINERALOGY:
 Olivine - Mode: 20% to 50%.
 Crystal size: ?
 Crystal shape: ?
 Crystal orientation: None.
 Percent replacement: 70%–100%(?).
 Comments: Serpentinized.
 Pyroxene - Mode: 30% to 55%.
 Crystal size: 5–10 mm.
 Crystal shape: Anhedral.
 Crystal orientation: None.
 Percent replacement: 80%.
 Comments: At least partly serpentinized.
 Spinel - Mode: 5% to 7%.
 Crystal size: <2 mm.
 Crystal shape: Anhedral and subhedral.
 Crystal orientation: None.
 Percent replacement: ?.
 Plagioclase - Mode: 10%–15%.
 Crystal size: 0.5–1 mm.
 Crystal shape: Anhedral.
 Crystal orientation: None.
 Percent replacement: 98%(?).

SECONDARY MINERALOGY:
 Total percent: 75%.
 Texture: Mesh serpentinite.
 Vein material: Fractures filled with serpentine.

ADDITIONAL COMMENTS: Mineralogical variation within this unit is a result of the irregular distribution of pyroxene and plagioclase.



149-897C-67R-1

UNIT 5: PATCHY SERPENTINIZED PERIDOTITE

Pieces 1–19

COLOR: Dark gray (N3) (Pieces 1–7); brownish black (5YR 2/1) (Pieces 8–16A); grayish green (5G 5/2) Pieces 17–19.

LAYERING: None.

DEFORMATION: Late brittle fractures filled with serpentine.

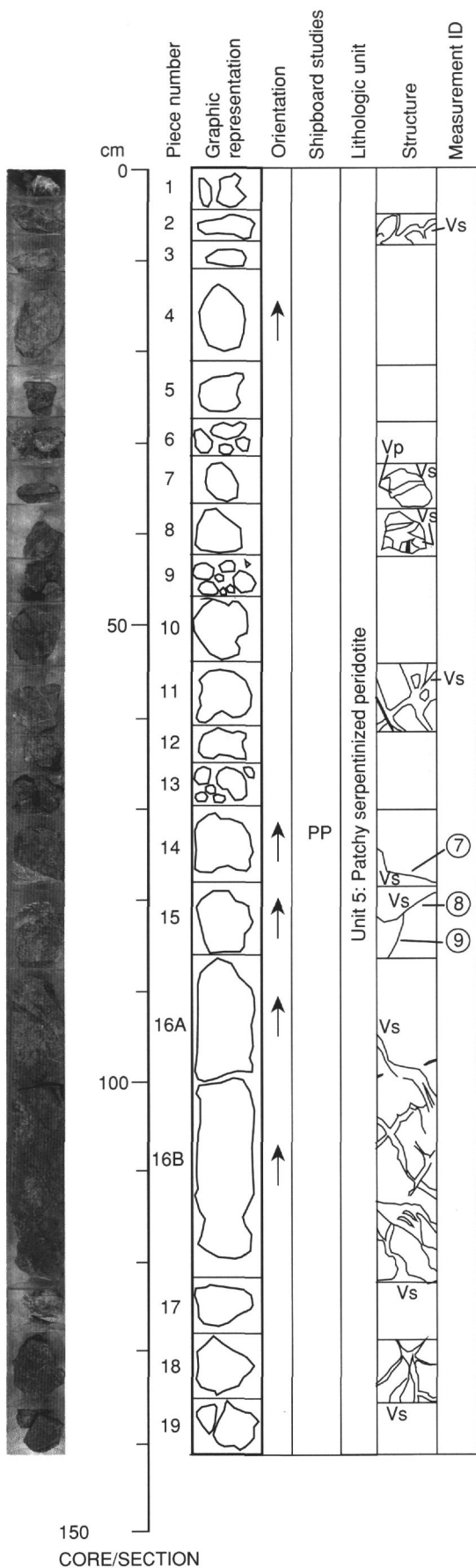
PRIMARY MINERALOGY:

- Olivine - Mode: 40% to 50%.
Crystal size: ?
Crystal shape: ?
Crystal orientation: None.
Percent replacement: 70%–100%(?).
Comments: Serpentinized.
- Pyroxene - Mode: 15% to 45%.
Crystal size: 5–10 mm.
Crystal shape: Anhedral (poikilitic).
Crystal orientation: None.
Percent replacement: 80%.
Comments: At least partly serpentinized.
- Spinel - Mode: ? to 5%.
Crystal size: <2 mm.
Crystal shape: Anhedral and subhedral.
Crystal orientation: None.
Percent replacement: ?.
- Plagioclase - Mode: 10%–20%.
Crystal size: 0.5–1 mm.
Crystal shape: Anhedral.
Crystal orientation: None.
Percent replacement: 98%(?).

SECONDARY MINERALOGY:

- Total percent: 75%.
- Texture: Mesh serpentinite.
- Vein material: Fractures filled with serpentine, and locally sulfides.

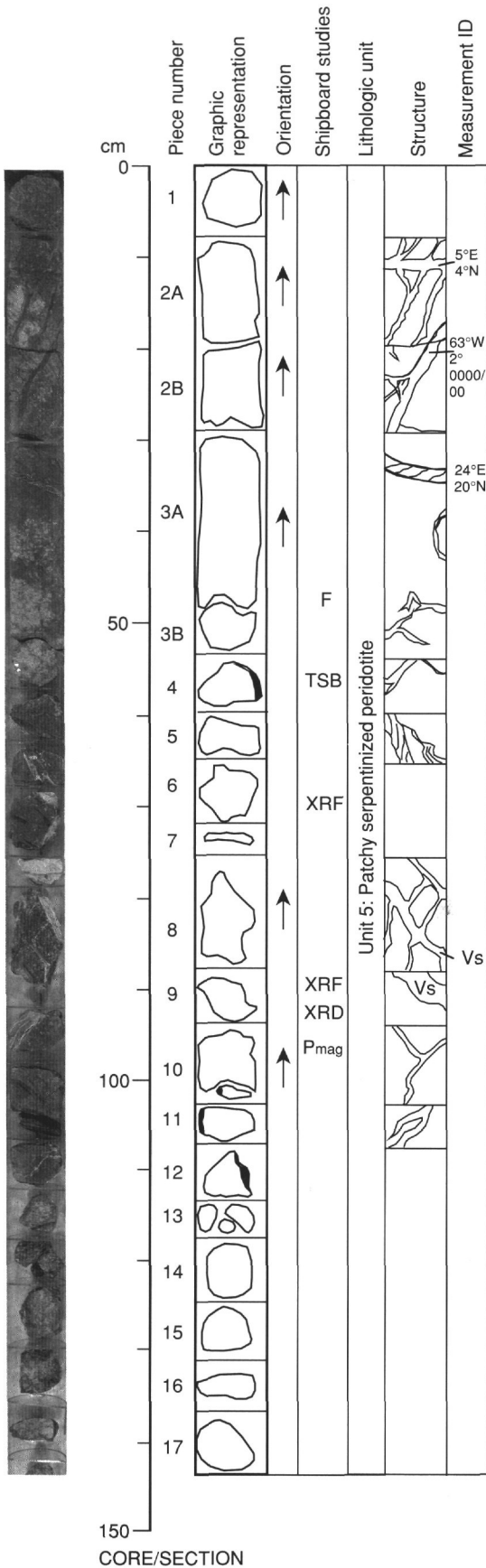
ADDITIONAL COMMENTS: Variation within this unit is a result of the irregular distribution of pyroxene and plagioclase.



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CORE/SECTION

UNIT 5: PATCHY SERPENTINIZED PERIDOTITE

Pieces 1–17



COLOR: Dark gray (N3)

LAYERING: None.

DEFORMATION: Late brittle fractures filled with serpentine.

PRIMARY MINERALOGY:

Olivine - Mode: 40% to 50%.

Crystal size: ?

Crystal shape: ?

Crystal orientation: None.

Percent replacement: 70%–100%(?).

Comments: Serpentinized.

Pyroxene - Mode: 15% to 45%.

Crystal size: 5–10 mm.

Crystal shape: Anhedral (poikilitic).

Crystal orientation: None.

Percent replacement: 80%.

Comments: At least partly serpentinized.

Spinel - Mode: ? to 5%.

Crystal size: <2 mm.

Crystal shape: Anhedral and subhedral.

Crystal orientation: None.

Percent replacement: ?.

Plagioclase - Mode: 10%–20%.

Crystal size: 0.5–1 mm.

Crystal shape: Anhedral.

Crystal orientation: None.

Percent replacement: 98%(?).

SECONDARY MINERALOGY:

Total percent: 75%.

Texture: Mesh serpentinite.

Vein material: Fractures filled with serpentine, and locally sulfides.

ADDITIONAL COMMENTS: Variation within this unit is a result of the irregular distribution of pyroxene and plagioclase.

149-897C-67R-3

UNIT 5: PATCHY SERPENTINIZED PERIDOTITE

Pieces 1A-10

COLOR: Dark gray (N3)

LAYERING: None.

DEFORMATION: Late brittle fractures filled with serpentine.

PRIMARY MINERALOGY:

Olivine - Mode: 40% to 50%.

Crystal size: ?

Crystal shape: ?

Crystal orientation: None.

Percent replacement: 70%-100%(?).

Comments: Serpentinized.

Pyroxene - Mode: 15% to 45%.

Crystal size: 5-10 mm.

Crystal shape: Anhedral (poikilitic).

Crystal orientation: None.

Percent replacement: 80%.

Comments: At least partly serpentinized.

Spinel - Mode: ? to 5%.

Crystal size: <2 mm.

Crystal shape: Anhedral and subhedral.

Crystal orientation: None.

Percent replacement: ?.

Plagioclase - Mode: 10%-20%.

Crystal size: 0.5-1 mm.

Crystal shape: Anhedral.

Crystal orientation: None.

Percent replacement: 98%(?).

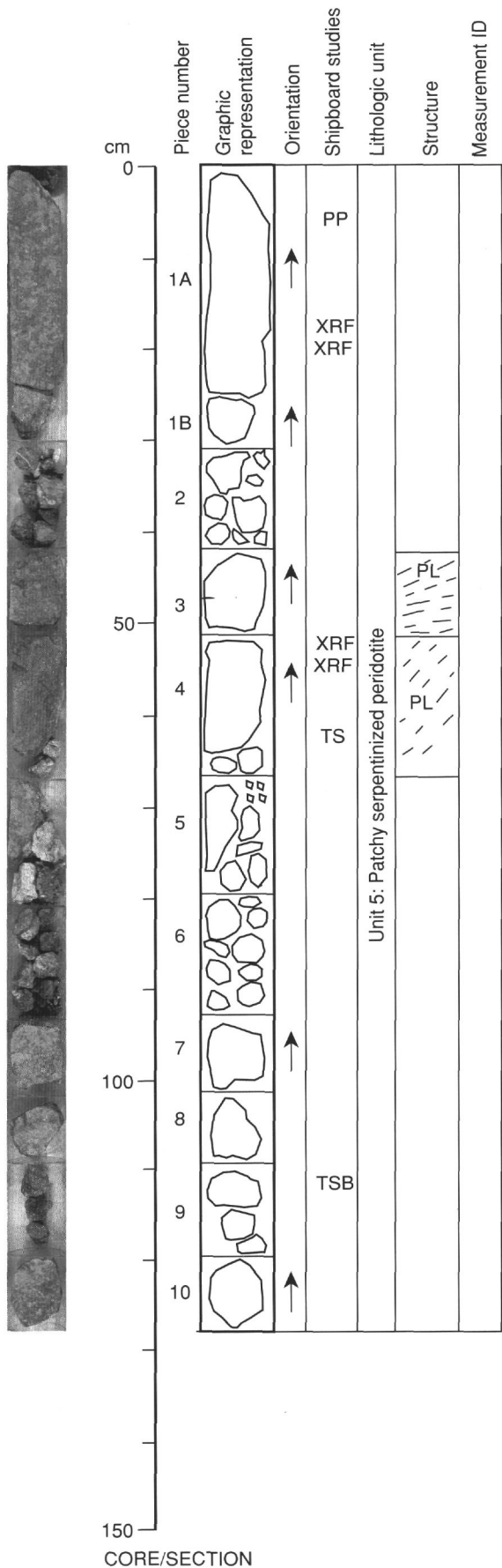
SECONDARY MINERALOGY:

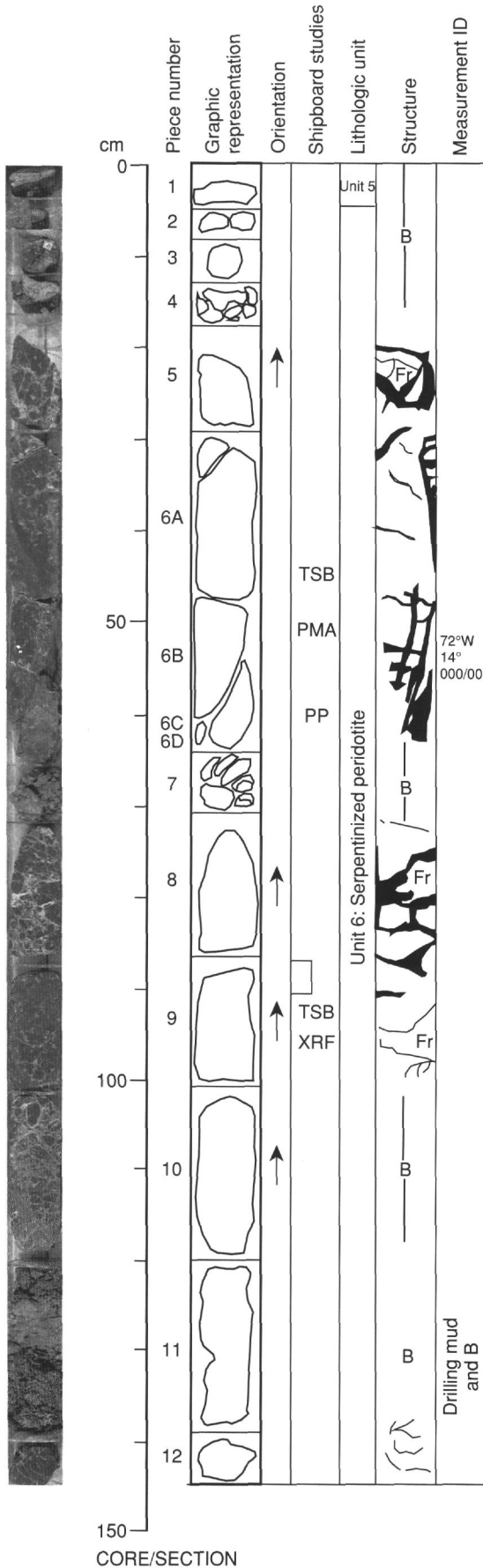
Total percent: 75%.

Texture: Mesh serpentinite.

Vein material: Fractures filled with serpentine, and locally sulfides.

ADDITIONAL COMMENTS: Variation within this unit is a result of the irregular distribution of pyroxene and plagioclase.





UNIT 5: PATCHY SERPENTINIZED PERIDOTITE

Piece 1 only

COLOR: Dark gray (N3).

LAYERING: None.

PRIMARY MINERALOGY: No primary olivine now preserved.

Olivine - Mode: 40%–50%.

Crystal size: 2–5 mm.

Pyroxene - Mode: 50%.

Crystal size: 2–5 mm.

Crystal shape: Poikilitic.

Plagioclase - Mode: 7%.

Crystal size: 1–2 mm.

Crystal shape: Rimming spinel or as veinlets.

Crystal orientation: Elongated in primary foliation.

Percent replacement: ?

Spinel - Mode: 2%.

Crystal size: <1 mm.

Crystal shape: Anhedral (holly-leaf), mostly elongate.

Crystal orientation: Elongate crystals define a primary foliation.

SECONDARY MINERALOGY:

Total percent: 95%.

Texture: Mesh serpentinite.

ADDITIONAL COMMENTS: Although there was no recovery in Core 149-897C-68, this piece is interpreted as the base of Unit 5. It could be a drilling artifact.

UNIT 6: SERPENTINIZED PERIDOTITE

Pieces 2–12

COLOR: Dark gray (N3).

LAYERING: None.

DEFORMATION: Cut by late-stage veins associated with brittle deformation. When intense, brecciation develops (Pieces 2 to 4, 8, 10, and 11).

PRIMARY MINERALOGY: Spinel often associated with pyroxene in clusters. No obvious plagioclase or altered plagioclase, but may be obscured by pervasive serpentinization.

Olivine - Mode: 90%.

Crystal size: ?

Crystal shape: ?

Crystal orientation: ?

Percent replacement: 100%.

Pyroxene - Mode: 10%.

Crystal size: 10–20 mm.

Crystal shape: Poikilitic.

Crystal orientation: None.

Percent replacement: 95%(?).

Spinel - Mode: 1%.

Crystal size: 1 mm.

SECONDARY MINERALOGY:

Total percent: 90%.

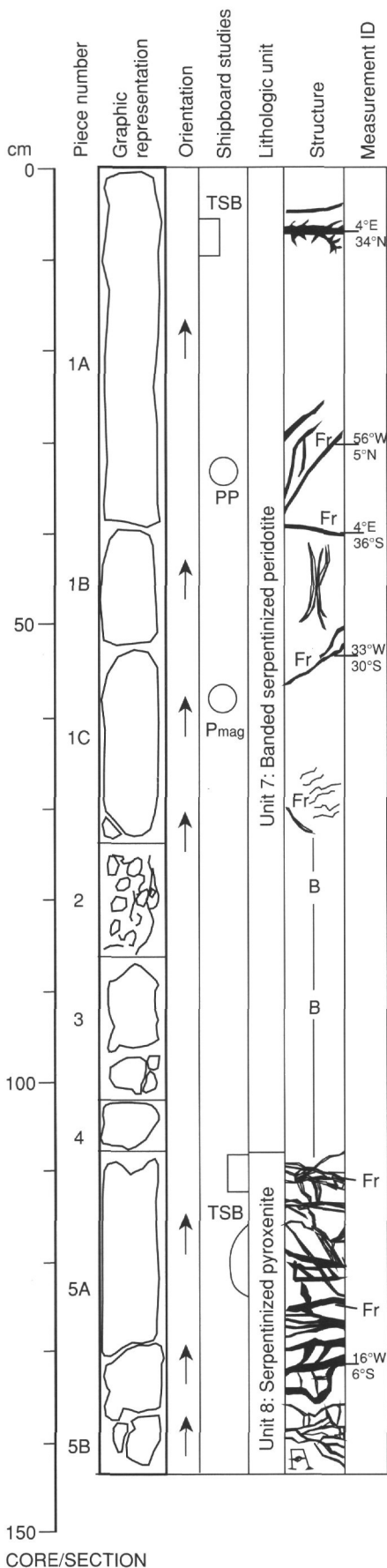
Texture: Mesh serpentinite.

Vein material: Small serpentinite veins (up to 1 cm) with minor scattered black mineral (magnetite(?)) and chlorite(?).

149-897C-70R-1

UNIT 7: BANDED SERPENTINIZED PERIDOTITE

Pieces 1A to 4



COLOR: Greenish black (5G 2/1).
LAYERING: No obvious layering.
DEFORMATION: No obvious ductile deformation. Late brittle deformation which produced fractures (1–2 mm thick) filled with serpentinite. Small fractures/veins tend to be localized around dike and light colored pyroxene crystals. A second more penetrative deformation is expressed as discontinuous sigmoidal veins filled with pale green serpentinite.

PRIMARY MINERALOGY: A thin pyroxenite dikelet occurs at 30 cm within piece 1A. The rock is depleted (pyroxene-free) adjacent to this vein (Unit 13).

- Olivine - Mode: 80%–98%.
 Crystal size: <5 mm(?).
 Crystal shape: Equant(?).
 Crystal orientation: None(?).
 Percent replacement: 100%.
 Comments: Replaced by serpentinite.
- Pyroxene - Mode: 0–12%.
 Crystal size: 1–8 mm.
 Crystal shape: Poikilitic.
 Crystal orientation: None.
 Percent replacement: >95%.
 Comments: Replaced by serpentinite.
- Spinel - Mode: 1%–2%.
 Crystal size: 1–2 mm.
 Crystal shape: Anhedral.

SECONDARY MINERALOGY:

Total percent: >95%.
 Texture: Mesh serpentinite.
 Vein material: Veins of serpentinite.

ADDITIONAL COMMENTS: No obvious plagioclase or altered plagioclase, but strong pervasive serpentization may obscure this mineral. Between 20 and 60 cm the rock originally contained about 1% spinel + 99% olivine. This dunitic interval is completely altered to serpentinite and magnetite and contrasts with other places in the section.

UNIT 8: SERPENTINIZED PYROXENITE

Pieces 5A and 5B

COLOR: Light brownish gray (5YR 6/1) to brownish gray (5YR 4/1).
LAYERING: None.
DEFORMATION: No obvious ductile deformation. Late intense brittle deformation which generated fractures filled with serpentinite.

PRIMARY MINERALOGY:

- Pyroxene - Mode: 60%–75%.
 Crystal size: 10–20 mm.
 Crystal shape: Subhedral.
 Crystal orientation: None.
 Percent replacement: >95%.
- Olivine - Mode: 20%–30%.
 Crystal size: 5–10 mm.
 Crystal shape: Anhedral.
 Crystal orientation: None.
 Percent replacement: >98%.
- Spinel - Mode: 1%.
 Crystal size: 1–4 mm.
 Crystal orientation: None.
 Percent replacement: ?

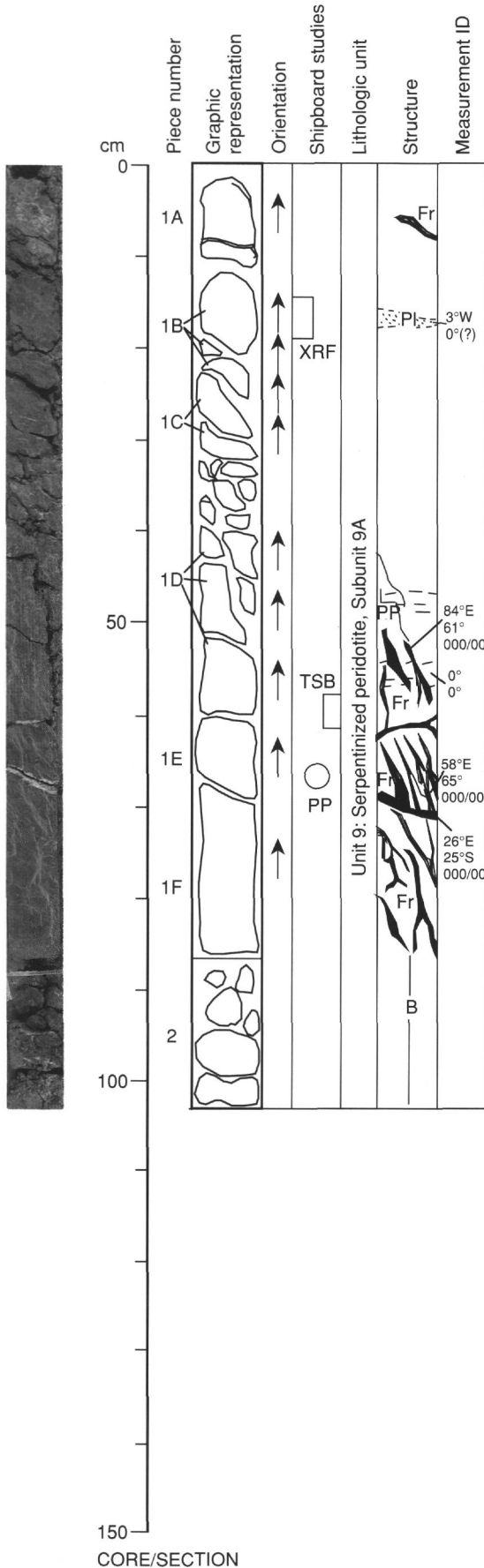
SECONDARY MINERALOGY:

Total percent: >90%.
 Texture: Initial coarse-grained texture is preserved and pseudomorphed by serpentinite.
 Vein material: Abundant mesh of light-colored serpentinite veins. Transition to underlying unit (Unit 14) in the lower part of Pieces 5A and 5B. The transition is to a pyroxene-rich peridotite.

UNIT 9: SERPENTINIZED PERIDOTITE

SUBUNIT 9A

Pieces 1A-2



COLOR: Dark greenish gray (5GY 4/1).

LAYERING: Faint layering marked by diffuse layers rich in pyroxene and by alignment of elongated spinels.

DEFORMATION: No obvious ductile deformation. Late brittle deformation which produced discontinuous sigmoidal fractures (1-5 mm) filled with pale serpentine. Fractures filled with white serpentine locally form a fracture cleavage.

PRIMARY MINERALOGY:

Olivine - Mode: 80%-90%.

Crystal size: ?.

Crystal shape: ?.

Crystal orientation: ?.

Percent replacement: 100%.

Comments: Altered to serpentine.

Pyroxene - Mode: 10%-20%.

Crystal size: 1-5 mm.

Crystal shape: Poikilitic.

Crystal orientation: None.

Percent replacement: >95%.

Comments: Usually replaced by serpentine.

Spinel - Mode: 1%-2%.

Crystal size: 1-2 mm.

Crystal shape: Anhedral.

SECONDARY MINERALOGY:

Total percent: >95%.

Texture: Mesh serpentinite.

Vein material: Veins of serpentinite are abundant.

ADDITIONAL COMMENTS: No obvious plagioclase. May be obscured by pervasive serpentinization of the rock. Unit continues in Section 149-897C-70R-3.